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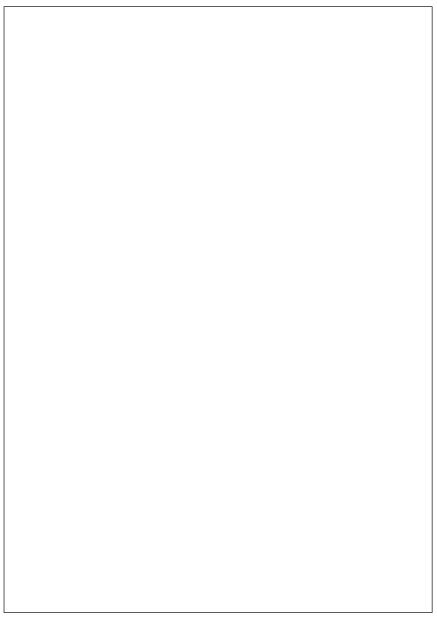
NPIC DATA SYSTEM
DATA AND CONTROL SEGMENT
ACQUISITION PHASE

APPENDIX A6
FACILITY INTERFACE DRAWING
(VERSION A)



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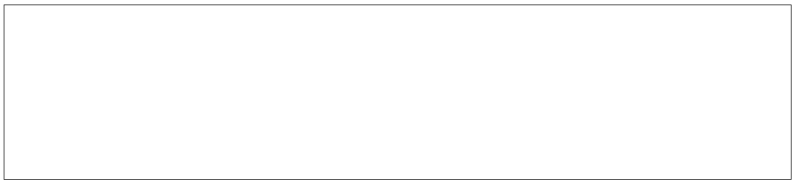

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D/C SEGMENT FACILITIES
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Section 1
INTRODUCTION

1.1 Scope

This plan provides a description of the Site Preparation and Equipment Installation Plan for integrating the Data and Control (D/C) Segment of the NPIC Data System (NDS) into NPIC [redacted] Annex located in Washington, D.C. STAT

The principal objective of this task is to define the site preparation requirements and to identify the responsibility for accomplishing the associated tasks.

This plan will be revised and/or supplemented during the System Acquisition Phase (SAP) in accordance with the provisions of the Program Implementation Directive (PID), Appendix 10.1, Data Requirement Description (DRD) 742.

1.2 General Concept

The D/C Segment ADP Hardware Configuration will be installed in the second floor Technical Equipment Area of the NPIC [redacted] Annex. STAT Site installation will commence on 1 January 1984 upon completion of construction of the Annex. The transition of the D/C Segment is described in Chapter 8.0 of the NDS SAP Technical Proposal, and the schedule for BOC and IOC installation is provided in Section 2.2 of this document.

The following assumptions were made in the preparation of this document:

a. All construction in the Technical Equipment Area will be completed prior to the start of D/C Segment installation. This includes all required air conditioning, electrical power

branch circuit installation to the power panels, all communications lines, lighting plumbing, installation of all walls, ceilings, doors, ramps etc. and the installation of a raised floor. [ ] installation planning representative will provide the customer assistance in the selection and placement of plumbing/power receptacles and connectors. STAT

b. The D/C Segment installation functions internal to equipment areas will be done [ ] This will include all plumbing, power and grounding connections to ADP, connecting intermachine cables and supervision of equipment placement. STAT

c. [ ] layout drawings for the D/C Segment equipment configuration were prepared within the boundaries of the second floor technical area and without consideration of Collateral Information (C/I) and Exploitation and Reporting (E/R) Segments installation plans or needs. STAT

The [ ] installation team will provide all necessary tools, equipment, materials and documentation to perform the installation of the ADPE. STAT

Section 2

INSTALLATION, CHECKOUT, TEST AND VERIFICATION

2.1 General

Installation, checkout, test and verification efforts include:

a. Preparation of facilities for D/C Segment hardware.

b. Deployment and physical emplacement of equipment.

c. Checkout of electrical and environmental interfaces with the Site Facility Segment.

d. Reverification of hardware performance.

e. Integrated systems testing intersegment and intrasegment interfaces.

The activity accomplishes the final steps of DT&E Testing, CPCI acceptance and integrated CI/CPCI system acceptance tests.

Installation efforts commence with the planning of equipment arrangements sufficiently in advance of delivery to enable government contractual action to modify the facilities. The [STAT] planning aid (Appendix A) is an example of checklists that will be used by the [STAT] installation team. These checklists are intended to assure that construction, renovation and installation tasks are realized in required time frames to avoid delay in scheduled transition of operations. Installation, checkout and test activities consist of receiving, inspecting and installing the hardware product and performing component and interface compatibility testing. Verification includes the confirmation that "as-built" and

"as-installed" documentation reflects the actual final configuration. Installation, checkout, test and verification is divided into the three following phases.

2.2 Installation Phase

Installation Phase begins at the completion of equipment factory test and provides for the disconnection, disassembly, packing, transport, unpacking, assembly and connection of the equipment in accordance with schedules and layouts for the equipment. Assembly of equipment includes the planned layout of the room, laying of the machine cables and assuring proper air flow for the room. Connection of the equipment is the physical installation of the computer and peripherals. After installation, air flow will be reverified. [ ] will be responsible for providing the packing materials at the factory, removing items at the destination, and providing the transport media. The facility at which the equipment is installed, including raised floors and the necessary power cooling, and voice communications equipment, will be provided by NPIC in accordance with the approved schedules and layouts. In addition, the installation of equipment and the establishment of connectivities to support external interfaces will be accomplished only when all equipment for a particular transition phase has been delivered and is ready for emplacement, and all installation documentation is verified to be on-site and describes the work to be accomplished. Figure 2.2-1 contains the BOC and IOC installation schedules. These schedules are based on the installation of an [ ] processor with associated peripherals at BOC and an additional [ ] processor with associated peripherals for IOC. Time schedules were based on four [ ] Field Engineering Division (FED) Field Engineers (FE) working twelve hour shifts.

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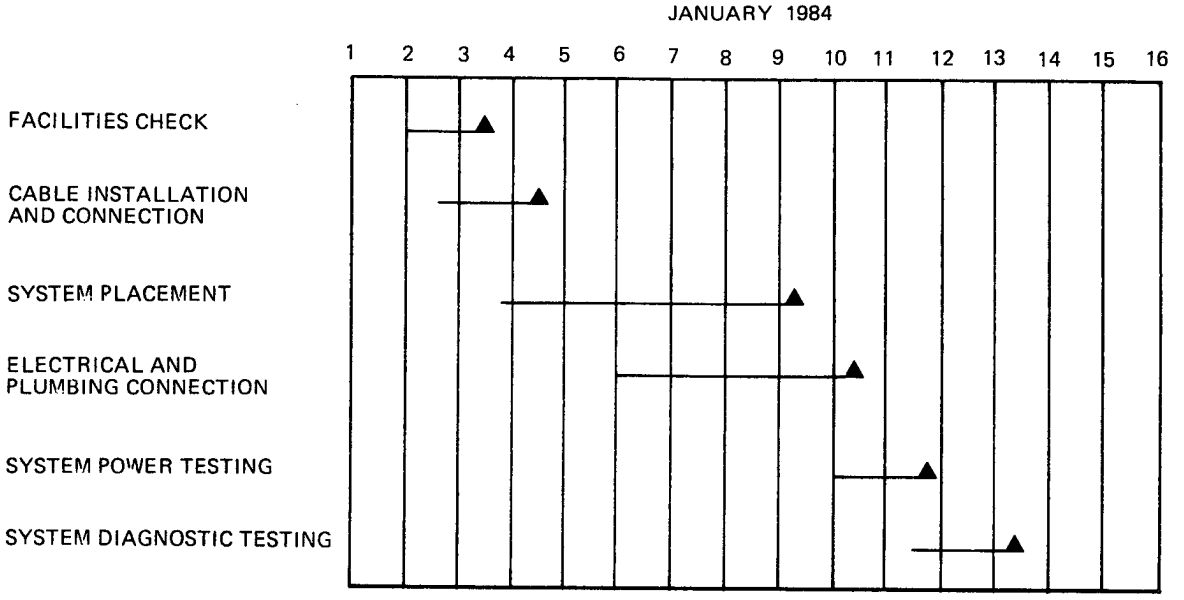
2.3 Checkout and Reverification Phase

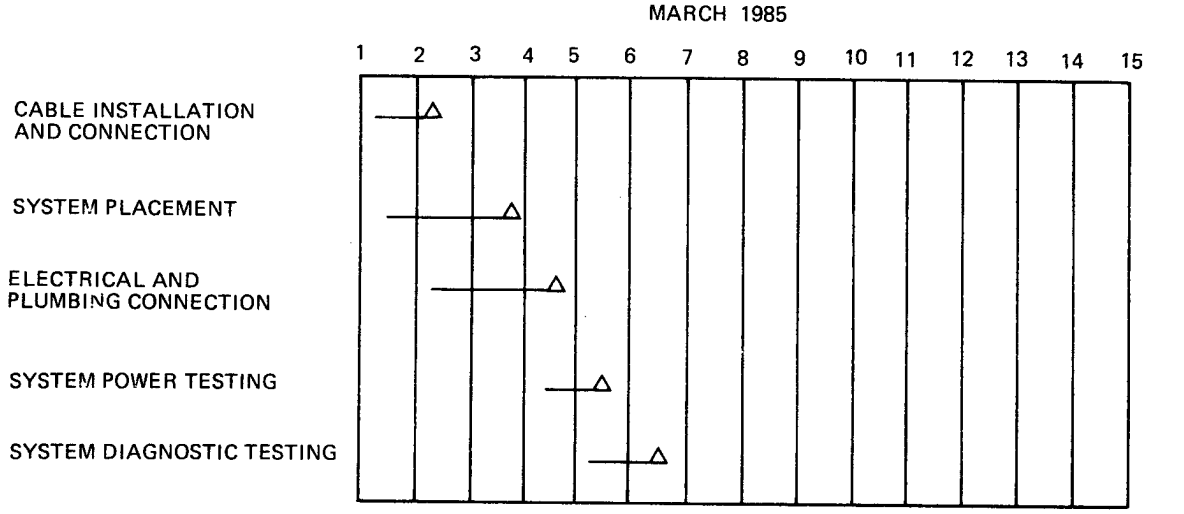
Checkout Phase begins when equipment is ready for DT&E reverification of CI performance. The materials required for checkout, such as tapes and

BOC INSTALLATION SCHEDULE



TIME FRAMES BASED ON 4 FIELD ENGINEERS WORKING 12 HOURS PER SHIFT

IOC INSTALLATION SCHEDULE



TIME FRAMES BASED ON 4 FIELD ENGINEERS WORKING 12 HOURS PER SHIFT

Figure 2.2-1. BOC and IOC Installation Schedules

printer paper, will be supplied by NPIC. Checkout will be accomplished through a series of inspections and reverification tests that are appropriate for the installed equipment.

Inspections will assure that all off-the-shelf components and assemblies comply with standards and specifications. Quality assurance standards will be imposed on all levels of fabrication, assembly and test.

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[redacted] will thoroughly check out the hardware equipment, utilizing micro-program diagnostics, tape diagnostics, disk diagnostics, on-line diagnostics, console and memory tests. Fault isolation testing will also be accomplished. At the completion of these tests, the effectiveness level of the hardware shall be demonstrated showing the ability of the hardware to be used in the support environment for a specified period of time. For the standard [redacted] hardware, this demonstration shall be as defined in [redacted] current General Services Administration Schedule for ADPE. For all other hardware it will be as defined in the test plan.

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Hardware acceptance testing is concluded upon the satisfactory completion of all inspections and tests.

2.4 Test Phase

The third phase begins with verifying that the operating system executes properly on the newly installed equipment.

The objective of these tests is to confirm that the system generation (SYSGEN) has been completed properly and that all devices are addressable by the operating system and their inputs are recognized by the system.

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The BOC [redacted] host software is then executed on the new equipment in a minor regression test sequence. These tests will verify that all software can be located and paged into the computer for execution.

The test phase culminates with the testing of the full BOC system configuration including the Channel-to-Channel data transfer capability between the [redacted] hosts and the Univac 1100/84 (configured with a 1 x 1 CPU-IOU combination available for test and a 3 x 3 configuration for the on-line system. Specific details concerning third phase testing will be available in the appropriate test plans. STAT

Section 3

SPACE CONFIGURATION

3.1 General

The equipment to be installed for the D/C Segment of the NDS program is specified in detail in Appendix B. This information includes the dimensions (height, width, length, weight), electrical power and cooling requirements. Specific plug, connector and receptacle information is contained in Appendix C. The equipment floor layout for the D/C Segment equipment is shown in Figure 3.1-1.

3.2 Under Floor Cable Space Requirements

The computer raised floor in the D/C Segment equipment area is to be 18 inches above the subfloor. This will provide sufficient space for cables, water lines and the cooling plenum.

3.3 Equipment Floor Loading

The specification contained in the NPIC [ ] Addition Document building requirements will adequately sustain the floor loading imposed by [ ] equipment in approved configuration.

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3.4 Door Width and Height Requirements

[ ] machines are normally shipped in packages 70" high, 60" long and 29" wide with dimensions interchangable if the unit can be upended. These dimensions are in keeping with the proposed freight elevator sizing described in the NPIC [ ] addition requirements document and door sizes should be similarly designed. A ramp should be installed from the freight elevator up to the false flooring to allow for adequate movement of equipment and materials.

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Figure 3.1-1 D/C Segment Equipment Configuration Layout

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3.5 Working Population Density

Personnel requirements will vary greatly depending on the workload at the time. On a per shift basis, an average of five people will operate the D/C Segment. This includes three computer operators who will monitor the three CPU consoles and mount/dismount tapes. The D/C Segment supervisor will monitor the D/C Segment Command and Control console, and the NDS System Command and Control supervisor will monitor the NDS System console. A Data Base Administrator console will be manned at least one shift per day. Office space in the computer facility will be required for both the computer operators and segment supervisors. Office space will also be required for the transition and integration team consisting of approximately twenty people. Transition and integration office requirements for BOC will be met by using the existing offices, (i.e., CE room, supervisors and operators offices), since the space will not be utilized until the system is operational. During IOC and FOC, the transition and integration team will need dedicated temporary office space to support installation and testing activities.

3.6 CE Room and Test Area

The customer engineers test area for the D/C Segment installation should contain 400 square feet (20' x 20') of space and be air conditioned to the same specifications as the machine room. The [ ] Field Engineering Branch Manager will provide, on a scaled layout the Field Engineering equipment which will be installed in the CE room to assist the customer in locating lights, receptacles and so forth.

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The test area should contain at least two 115V, single phase, 15A receptacles (convenience outlets) and other receptacles adequate to repair any device that can be serviced in the CE room should be provided. The 115V receptacles (convenience outlets) should not be provided power from the computer power panel.

3.7 Integrated Work Station (IWS)

The IWS will consist of a family of work stations based on a common architecture. Three basic versions of this architecture will be implemented as described in the following paragraphs.

a. Basic IWS. This work station will provide full interactive alphanumeric capabilities and limited local processing in support of administrative staff and analysts' supervisors.

b. Enhanced IWS. This work station will include the features of the Basic IWS and, in addition, provide for increased local processing through the inclusion of a small capacity hard disk drive for local storage of software and data.

c. Full Capacity IWS. This work station will incorporate the features of the Enhanced IWS and will include the added capability to display imagery.

The power requirements and cooling requirements for each are listed in Table 3.7-3.

[redacted] will interface with the Exploitation and Reporting (E/R) segment contractor during SAP to determine work station layouts, facility impacts, and requirements. The dimensions of the IWS are significantly larger than the existing DD 5600. The Basic IWS and Enhanced IWS dimensions are 3' x 5'. The dimensions of the Full Capability IWS are 3' x 6'.

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Table 3.7-3 IWS Power and Cooling Information

LOCATION	FOC NUMBER	TERMINAL TYPES	RATE KVA	TOTAL KVA
	10	ENHANCED IWS	0.96	9.60
	100	FULL CAPABILITY IWS	3.20	320.00
	130	ENHANCED IWS	0.96	124.80
	373	FULL CAPABILITY IWS	3.20	1193.60
	178	BASIC IWS	.57	101.46
ELSEWHERE	37	BASIC IWS	.57	21.09
TBD	27	FULL CAPABILITY IWS	3.20	86.40
	145	BASIC IWS	.57	82.65
TOTAL	1000			1939.60 KVA

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LOCATION	TOTAL KVA	TOTAL BTU	REQUIRED A/C (TONS)
	330	1,124,858	94
	1589	5,422,631	452
ELSEWHERE	21	71,975	6

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Section 4

ELECTRICAL PLAN

4.1 Primary Power Requirements

The system power requirements are listed in Appendix B for the individual units to be installed. Quantities are shown for each unit along with the power requirements. The total number of upgrade units are then identified and an expanded system power requirement determined.

It should be noted that some units are powered from another unit and do not require branch circuits. The description and type of connector provided with the ADPE unit power cord is identified by an alphabetic code in Appendix C.

4.2 Power Panels

For maximum system reliability, the computer power panel should connect to feeders that serve no other loads. Transient-producing devices, such as accounting machines, card punch machines, typewriters, desk calculators and the like, must be connected to separate panels from those servicing the ADPE to eliminate a potential source of noise interference to the computer system.

The Government is responsible for providing power panel(s) adequate to meet the system power requirements as specified in this document. The power panels should be located in an unobstructed, well-lighted area within the technical equipment areas. Preferred locations for the power panels and the proposed breaker layout will be shown in the Electrical Branch Circuit Diagram.

4.3 Branch Circuitry

The individual branch circuits on the panel shall be protected by suitable circuit breakers properly de-rated according to the manufacturer specifications and applicable codes. Each circuit breaker shall be labeled to identify the branch circuit and ADPE unit it is controlling. The grounding wire for the branch circuit must be insulated and equal in size to the phase conductor. Branch circuits must be terminated under the raised floor within three meters (10 feet) of the machines they supply.

Unit power cords are supplied in 4.3 meter (14 foot) lengths, unless otherwise noted in the unit specification data. The length is measured from the symbol (+) on the floor plan. [ ] power plugs that can be STAT located under the raised floor will be watertight. The customer provided receptacles and cable should also be watertight. The receptacle can be either an inline or a fixed type, depending on local code requirements. Both the [ ] processors require 400 cycle power. The STAT [ ] Power Distribution Unit (PDU) will provide 400 cycle power for STAT the [ ] processor, but the [ ] will require 61.7 KVA of 400 STAT cycle power from an NPIC Motor Generator source.

4.4 Grounding

All [ ] machines are provided with an equipment ground wire (green or STAT green with yellow trace). At the branch circuit panel, the green wire ground from all machines must be tied into one main grounding conductor. This equipment grounding wire is a dedicated ground, not a neutral, and must be carried back to service ground or suitable building ground. Conduit must not be used as the only grounding means. A typical power panel grounding configuration is depicted in Figure 4.4-1.

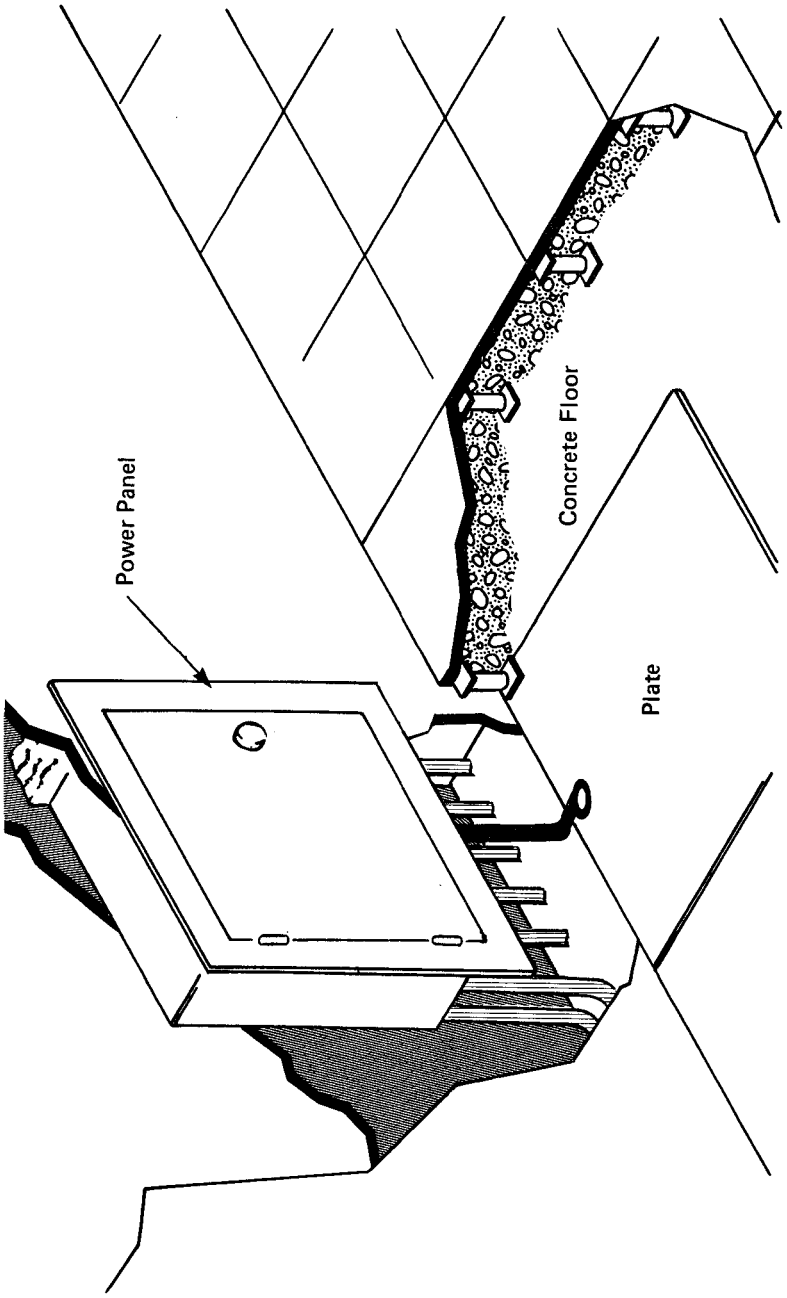


Figure 4.4-1. Transient Grounding Plate

4.5 Emergency Power-Off

The government should include in the electrical design a means to power-off all computer and air conditioning equipment in an emergency. This can be accomplished by providing a main service disconnect control located convenient to the operator and next to the main and emergency exit doors of the computer room. A similar independent EPO switch is required for A/C equipment.

4.6 Phase Rotation and Color Code

The three-phase power receptacles for use with the system must be wired for correct phase rotation. Looking at the face of the receptacle, and running counter clockwise from the ground pin, the sequencing will be Phase 1, Phase 2 and Phase 3. Figure 4.6-1, Power Distribution System shows proper phase rotation connections for the user installation. Color code for conductors shall be per the National Electric Code (NEC).

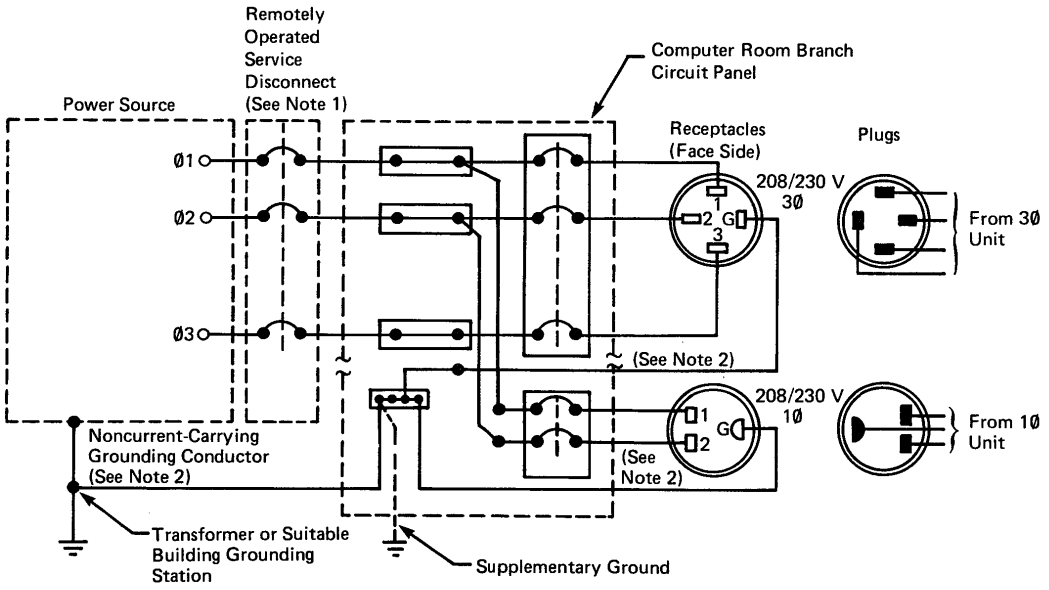
4.7 Main Power Panel Locations

Based upon the equipment room configuration the recommended location of the main power panel and ADP power plug locations are shown in Figure 4.7-1. A typical computer room power wiring diagram is shown in Figure 4.7-2.

4.8 Convenience Outlets

A suitable number of convenience outlets should be installed in the computer room and CE room for use by maintenance personnel, cleaning service, customer engineers, etc. Convenience outlets should be on the lighting or other building circuits, not on the computer power panel or feeder.

Under no circumstances are system convenience outlets on [ ] machines to be used for any purpose other than normal servicing. STAT



Notes:

1. Remotely Disengaged By An Emergency Device Located Near the Console Operator and Next to the Main Exit Doors.
2. Ground Wire (Green or Green With Yellow Trace).

Figure 4.6-1. Power Distribution System

Figure 4.7-1. Power Panel and Branch Circuit Layout

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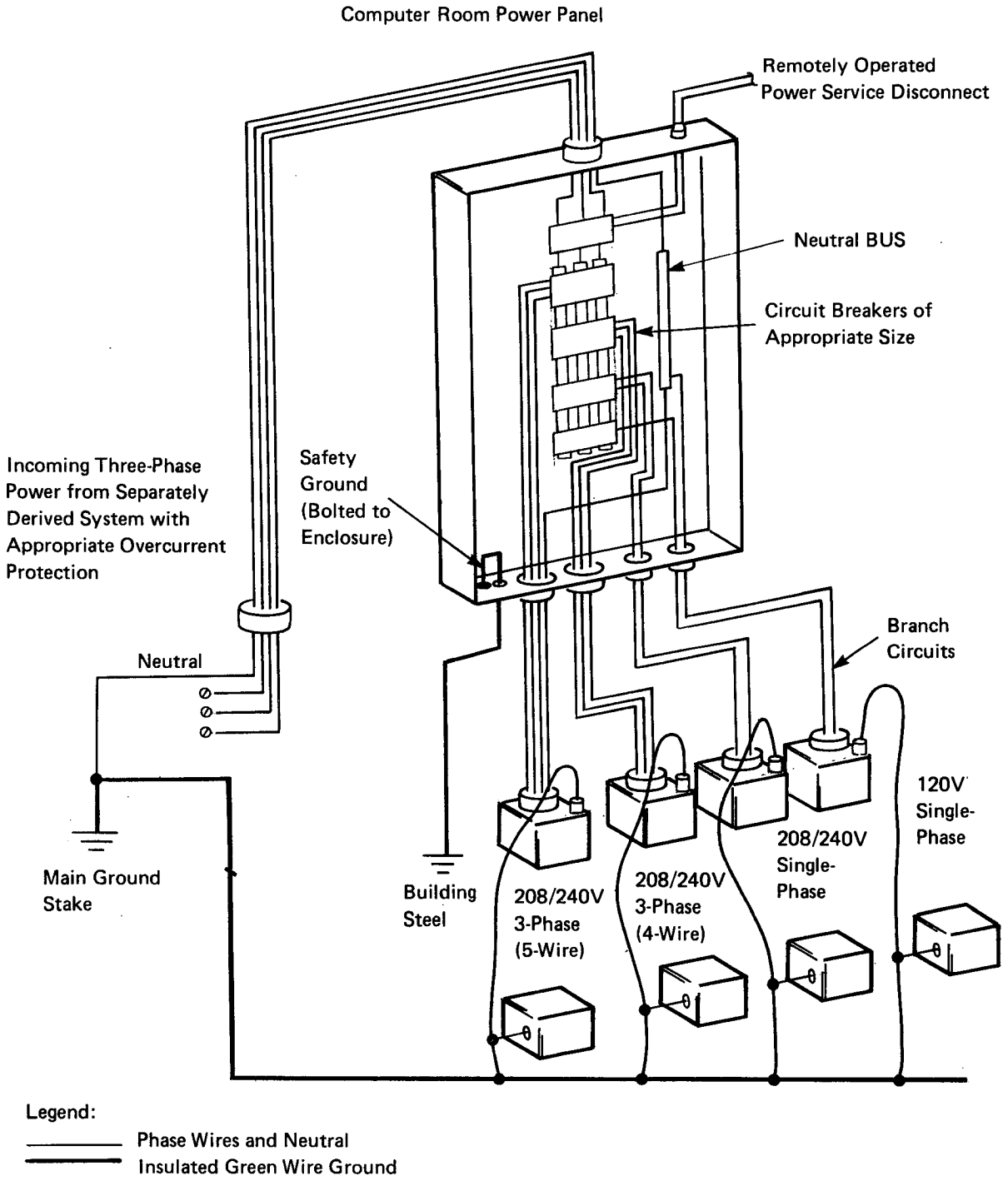


Figure 4.7-2. Typical Power Wiring Diagram

Section 5
LIGHTING REQUIREMENTS

The lighting requirements provide for three separate lighting situations. One of these is for the work stations where display consoles are normally being used. The second is for the storage area. The third is for the remaining computer floor area. Individual light switches may be provided where light control switches are not considered practical or cost-effective. The use of group switches for lighting control is presented for consideration, not as a requirement for the operational facility.

5.1 Work Stations

The operators at the work stations all have regular need to use the display consoles. Lighting should be provided over all work stations to reduce glare on the display consoles. Lighting is also needed to reference printed materials such as computer listings and users' manuals. Moderate lighting between 75-85 footcandles at desk height provides optimum illumination for visual tasks at these work stations. It is usually helpful if lighting is reasonably balanced, glare sources are eliminated, and display brightness is kept as low as possible while providing good legibility.

5.2 Storage Area

The storage area needs to be accessed only to store and retrieve provisions such as computer paper, spare cartridges, paper for the console copy printers, and ribbons for the printers.

The storage room should be provided with overhead lights providing 50-75 footcandles. Individual light switches or a local group switch could be provided at the entrance to the storage area so that the lights can be turned off when the area is not in use.

5.3 Remainder of Computer Floor

The remainder of the computer floor normally requires very little lighting since there is no planned activity. However, illumination of 540 to 810 lux (50-75 footcandles), measured 760 millimeters (30 inches) above the floor, should be maintained. This lighting is recommended for use by maintenance personnel. A local light switch to leave night emergency lighting on when no maintenance is taking place in each of the bays would conserve energy.

A master switch control panel could be located at the main entrance to the computer room. Each switch in the master panel would control a group of two (2) to four (4) local switches. Local light switches could be installed for each bay or every two (2) to four (4) light fixtures in groups of two (2) to four (4) switches using a low voltage control system. Figure 5.3-1 is a sample lighting layout and control scheme and Figure 5.3-2 is a wiring diagram for a typical lighting zone. This is only one of many ways of installing and controlling lights. Local contractor codes and preferences will dictate the specific method used.

5.4 Emergency Lighting

The technical equipment and lighting systems should be powered from separate substations. Therefore, operations may continue during a power interruption which affects only the lighting circuits, providing adequate emergency lighting is available. The number and positioning of the emergency lights should be designed to ensure adequate illumination on the control input devices to allow the continuation of operations.

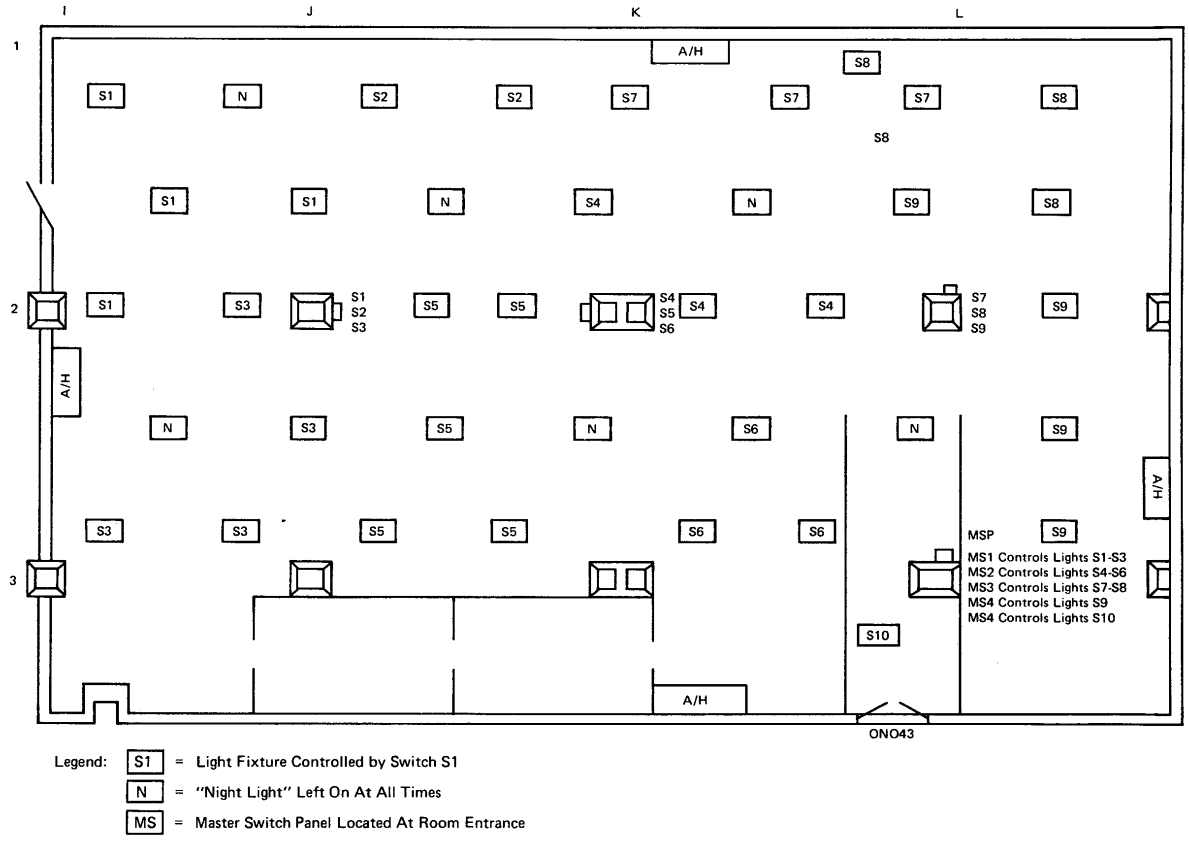
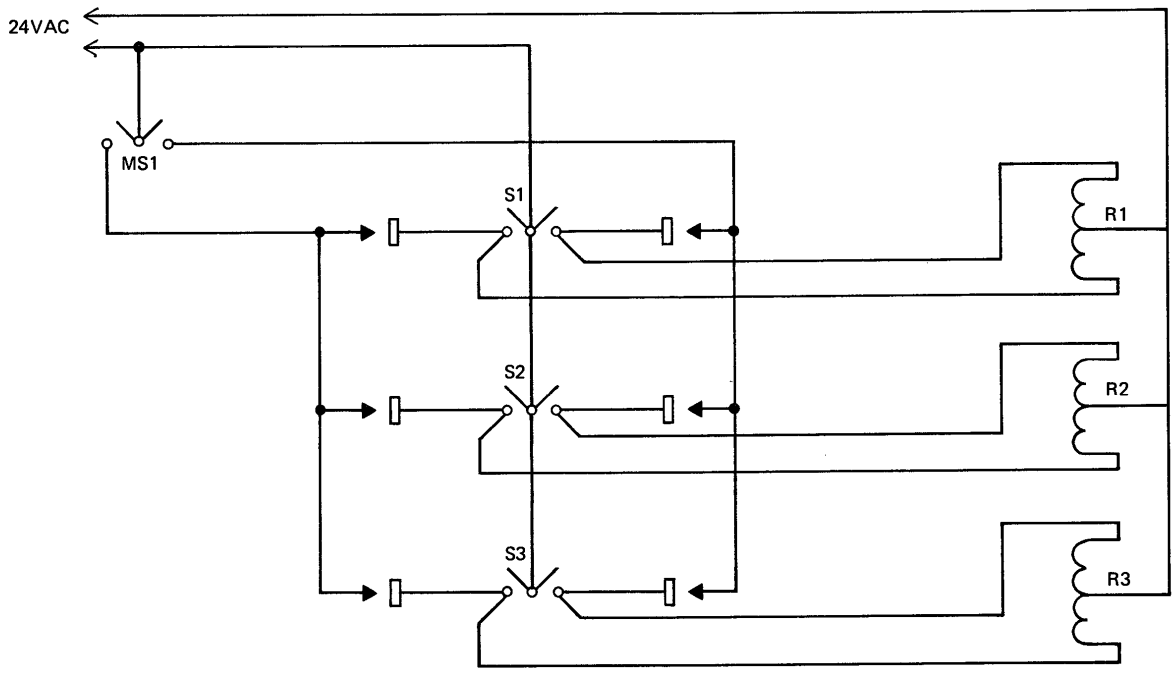


Figure 5.3-1. Sample Lighting Layout and Control Scheme



MS1 – General Electric RFS6 or Similar
S1 – General Electric RCS2 or Similar
R1 – General Electric RR7 or Similar
Diode– 1N4004 or Similar

Figure 5.3-2. Wiring Diagram for a Typical Lighting Zone

Section 6

COOLING REQUIREMENTS

6.1 Operating Area Environmental Conditions

The peripheral units of the installation are internally cooled with air circulated by blowers. Air intake is generally through the bottom on each unit. The total equipment air cooled heat load 694,942 BTU/HR is shown in Appendix B. To meet the cooling requirements of the ADP system approximately 58 tons of cooling air will be necessary, additional cooling will be required for other equipment, lighting and space losses in order to maintain an ambient environment as specified in Section 6.2, System Requirements.

6.1.1 Equipment Air Pressure

The system should use predominantly recirculated air with a set minimum for introduction of fresh air for personnel. This minimum fresh air introduction will enable the machine area to be pressurized so that air leakage is always outward. This will help prevent dust entry from adjacent areas.

6.1.2 Air Cleanliness Requirements

A high-efficiency filter rated according to ASHRAE Standard 52-76, should be installed to filter especially dusty air supplied to the computer room. An Electrostatic Plate Filter with minimum of 85% to 90% efficiency is recommended for this purpose.

6.2 System Requirements

The air conditioning system should be designed to operate at 75°F (24°C) and 50% relative humidity at altitudes of up to 7000 feet (2,150m). This design point provides for the largest buffer in terms of available system time, and it is also the condition which has been most suitable for personal comfort. If the A/C system fails or malfunctions, the computer will be able to operate until it reaches its specified limits. This increases the possibility of effecting A/CC repair before the computer must be shut down. The presently stated Annex air conditioning provisions will meet the above stated requirements.

The air flow for each unit is specified in Appendix B. Commercial A/C generally provides 400 to 600 CFM per ton (12000 BTU). Any substantial deviations from the recommended design point in either direction, if maintained for long periods, will expose the system to malfunction from these external conditions (i.e. high relative humidity may cause improper feeding of paper, while low humidity may cause static discharge under some conditions).

The following data summarizes the important air conditioning design criteria needed for the D/C Segment installation.

	Machine Operating	Machine Nonoperating	Design Criteria
Temperature	60° to 90°F (16° to 32°C)	50° to 110° (10° to 43°C)	75°F (24°C)
Relative Humidity	20% to 80%	8% to 80%	50%
Max. Wet Bulb	78°F (26°C)	80°F (27°C)	

The air entering the machine must be within specified criteria for machine operation before power is turned on.

Under no condition of operations may the machine input air and room air exceed 90°F (32°C). This is a maximum operating temperature limit and should not be considered a design condition.

6.2.1 Chilled Water Requirements

The three (3) [ ] CPUs, two 3081s and one 3033, require chilled water to provide about 181,400 BTU/HR of cooling capacity. The chilled water is provided to the [ ] 3087 and [ ] 3037 Chilled Water Distribution Units (CDU) which then supply it to the [ ] CPUs. The proposed source of chilled water in the building will sufficiently meet this need. The chilled water line shall have taps at the required locations to supply the [ ] CDU's. Figure 6.2.1-1 shows the typical connections for customer supplied chilled water.

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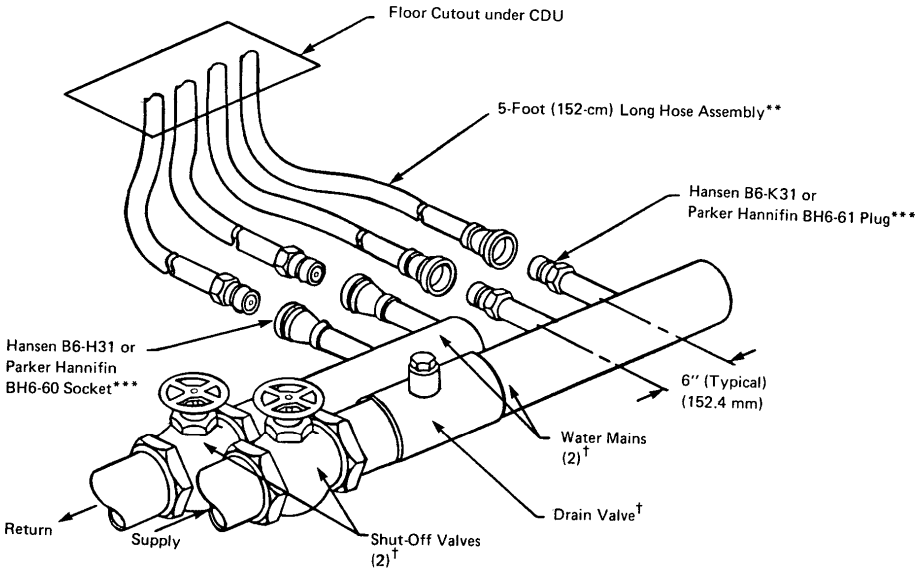
6.3 Temperature and Humidity Recording Instruments

Ambient and underfloor temperature and humidity recording instruments should be installed in the D/C Segment area to provide a continuous record of temperature and humidity conditions in the machine area. If the air conditioning requirements are not met, a record is available to determine the extent and duration of the undesirable condition to indicate whether a drying out period is required. This may, in some cases, save machine downtime.



* Customer Should Install Two Supply and Two Return Connections to His Water Mains, and He Should Supply Applicable Flow Rate. CDUs Delivered With Three Supply and Three Return Hoses Can Use Two of Each, Provided That the Applicable Flow Rate is Supplied.

** [redacted] Supplied:
Six On 3067s With Serial Number Below 60140.
Four On 3027s, 3037s, and 3067s With Serial Number 60140 and Higher.
Two on 3087.

*** Customer Supplied:
Three of Each When Six Hoses Are Used.
Two of Each When Four Hoses Are Used.
Plug and Socket Types Are Interchangeable.

† Customer Supplied.

Figure 6.2.1-1. Typical Connections for Customer Supplied Chilled Water

Section 7

SAFETY PLANS

7.1 Fire Protection System

It is recommended that in place of the planned pre-action water sprinkler system, a "Halon" or similar type system be installed to protect the contents of the planned computer room against fire. A pre-action or similar system can be used in non-technical equipment areas.

A Life Safety Code compliance review must be conducted by a government facility emergency officer or a local fire authority. Government procedures should be established which would ensure the safety and health of employees and the security of materials during unusual circumstances. Provisions should also include information on occupational safety and health precautions and emergency medical aid available.

7.2 Hazardous Materials or Conditions

There are no hazardous materials or conditions associated with the technical area equipment.

7.3 Moisture Detection

A moisture/water detection system is required to detect underfloor moisture/water in the technical equipment areas. This system should provide a zoned audio-visual indication of underfloor moisture.

7.4 Cleaning Requirements

If carpet floor coverings are used, they should be one of the variety marketed by carpet manufacturers as antistatic. Maintenance of all antistatic floor coverings (carpet, tile, etc.) should be in agreement with the individual supplier's recommendations.

Note: Vacuuming equipment used in the machine area should have a non-conductive hose and nozzle assembly. This safety precaution minimizes any possibility of static discharge or electrical shock.

All internal equipment cleaning and maintenance will be handled by customer engineers under contract to perform said functions.

Appendix A
INSTALLATION PLANNING SCHEDULE AND CHECKLIST

This planning aid lists installation tasks and responsibilities in order of occurrence. If new site construction or major renovation is required, a considerably longer lead time and planning cycle will probably be required. Because data processing equipment requirements differ, use the following suggested schedule and list of tasks as a guide.

Time Frame and Task or Consideration	*No Action Required*	*Scheduled Completion Date*	*Actual Completion Date*
Eight Months Before Delivery			
1. Verify [ ] equipment to be installed	____	____	____
2. Verify delivery and installation schedule for common-carrier telecommunication equipment.	____	____	____
3. Determine prospective location. Prepare a list of components, storage cabinets, work tables, chairs, desks, and other furnishings to be used. In planning space requirements, have you considered:			
a. Future expansion?	____	____	____
b. Floor loading?	____	____	____
c. Fire protection?	____	____	____
d. Safety of personnel and records?	____	____	____
e. Security?	____	____	____
f. Acoustics?	____	____	____
g. Vibration?	____	____	____
h. Potential for electromagnetic interference?	____	____	____
i. Possibility of atmospheric contamination?	____	____	____
j. Adequate access route for movement of equipment from receiving area to computer room (ramps, doors, corridors, elevators, etc.)?	____	____	____
k. Rigging required?	____	____	____
4. Make a scaled layout of the room and equipment (1.2.2).	____	____	____
a. Service clearances and service access observed?	____	____	____
b. Operator convenience and storage of forms and other supplies considered?	____	____	____

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Time Frame and Task or Consideration	*No Action Required*	*Scheduled Completion Date*	*Actual Completion Date*	
c. Cable length limitations observed?	____	____	____	
d. Place orders for any non [redacted] supplied cables.	____	____	____	STAT
e. Channel priorities of devices considered?	____	____	____	
f. Layout of units (including furniture, etc.) made by using scaled templates?	____	____	____	
5. Determine floor loading.	____	____	____	
6. Use of raised floors.	____	____	____	
a. Adequate height for all equipment cables, plumbing, etc.?	____	____	____	
b. Raised floor surfaces free of exposed metal?	____	____	____	
c. Panel covering meets antistatic and resistance requirements?	____	____	____	
d. Extra pedestals required?	____	____	____	
e. Conductive path provided from metal raised floor (if used) to ground?	____	____	____	
7. Determine if furniture antistatic characteristics meet resistance requirements.	____	____	____	
8. Consider acoustic treatment of room.	____	____	____	
9. Determine lighting requirements:	____	____	____	
a. General lighting adequate?	____	____	____	
b. Emergency lighting provided?	____	____	____	
10. Determine air conditioning requirements:				
a. Size the air conditioning load by summing requirements for all heat loads (including personnel).	____	____	____	
b. Present facilities adequate?	____	____	____	
c. Humidity control required?	____	____	____	
d. Temperature and humidity recording devices provided?	____	____	____	
e. Air conditioning controlled by computer room power-off disconnect?	____	____	____	
11. Determine power requirements:				
a. Voltage limits meet [redacted] equipment specifications?	____	____	____	STAT
b. Total load computed by using power profile information provided [redacted]?	____	____	____	STAT

APPENDIX A Installation Planning Schedule and Checklist (2 of 5)

Time Frame and Task or Consideration	*No Action Required*	*Scheduled Completion Date*	*Actual Completion Date*
c. Arrangements made for any additional services required?			
d. Computer power panels connected to feeders that serve no other loads?			
e. Computer power panels easily accessible, preferably in computer room?			
f. Circuit breakers labeled to identify which branch circuits they control?			
g. Computer power panel grounded to service entrance ground or suitable building ground?			
h. Branch circuit grounding wire insulated?			
i. Each branch circuit receptacle checked for proper phase rotation?			
j. Required room emergency power-off controls located at operator area as well as at main computer-room exit doors?			
k. Room emergency power-off provided for any equipment located remote from the main computer room?			
l. Lightning protection requirements considered?			
m. General purpose convenience outlets installed?			
n. Standby (backup) power system planned? Type?			
12. If previous equipment must be retained and operated while new units are being installed:			
a. Additional power required?			
b. Temporary power circuits required?			
c. Additional temporary air conditioning required?			
d. Temporary layout planned for the transition period?			
e. External cables available?			
13. Determine safety requirements:			
a. Computer in a fire-resistant area or room?			
b. Computer area isolated from hazardous processes and materials?			
c. Fire protection equipment available?			
d. Emergency plan for personnel and records evacuation established?			

Time Frame and Task or Consideration	*No Action Required*	*Scheduled Completion Date*	*Actual Completion Date*	
14. Is space planned for storage of data recording media within specifications?	____	____	____	
15. Verify all contractor and vendor related activity schedules to ensure that facilities are ready when equipment is delivered.	____	____	____	
Six Months Before Delivery:				
Verify the following schedule:				
1. Installation of power.	____	____	____	
2. Installation of air conditioning.	____	____	____	
3. Delivery of equipment.	____	____	____	
4. Installation of equipment.	____	____	____	
Four Months Before Delivery:				
1. Review the Eight-Month checklist.	____	____	____	
2. Review equipment to be installed and finalize layout plan.	____	____	____	
3. Submit the layout plan to [ ] so that [ ] supplied cables can be ordered.	____	____	____	STAT
4. Verify plans for installing cables through permanent walls or floors.	____	____	____	
5. Confirm all contractor and vendor schedules to ensure that schedules are compatible with equipment delivery.	____	____	____	
6. Confirm that all telephone or PTT line installation schedules for Remote Support Facility and telecommunication equipment are compatible with equipment delivery schedules.	____	____	____	
Two Weeks Before Delivery:				
1. Review the Four-Month checklist.	____	____	____	
2. Verify completion of all contractor and vendor activity.	____	____	____	
3. [ ] supplied cables should arrive.	____	____	____	STAT
4. Accept delivery of [ ] test equipment and furniture.	____	____	____	STAT

Time Frame and Task or Consideration		*No Action Required*	*Scheduled Completion Date*	*Actual Completion Date*
One Week Before Delivery:				
1.	Review the Two-Week checklist.	____	____	____
2.	Air conditioning system operational?	____	____	____
3.	Arrangements made for balancing air conditioning system to computer room load immediately after equipment installation?	____	____	____
4.	Power facilities installed?	____	____	____
5.	Branch circuits tested for proper phase rotation?	____	____	____
6.	Physical facilities (plastering, painting, decorating, lighting, ramps, floors, etc.) completed?	____	____	____
7.	Communication facilities (voice and data lines, modems, couplers, etc.) installed and tested?	____	____	____
8.	Remote Support Facility line and telephone handset installed and tested?	____	____	____
9.	Cable holes cut in floor panels as shown on final layout?	____	____	____
10.	Arrangements made for moving equipment from receiving area to final location?	____	____	____

Appendix B
D/C SEGMENT TECHNICAL EQUIPMENT LISTING

Appendix B. D/C Segment Technical Equipment Listing

Unit	Model	Description	Qty	Weight Per Unit	Dimensions (inches) F	S	H	Elec Pwr Req'ts 60 Hz KVA Unit Total	400 Hz KVA Unit Total	Cooling Req'ts BTU/Hr Water Unit	Water Total	BTU/Hr Air Unit	Air Total	CFM	Conn Type See APPX C-1	System Notes
3033	U24	CPU	1	10,200	**			7.20	61.70		90,000		128,850	5750	–	1,3
3036	1	Console	1	1,375	29.75	90										
					29.5	48	49							220	–	1
3037	1	Pwr + Coolant Dist	1	2,825	96.5	32	70							–	D	
3081	D24	CPU	2	6,090	***			1.00	32.2*	40,200	80,400	9,600	19,200	850	D/G	
3082	24	Processor Controller	2	2,720	38.25	72.25										
					33.25	28	70.5	1.40	3.4*			7,800	15,600	800	–	1
3087	1	Coolant Dist Unit	2	955	44.5	32	70.5	4.40	.2*	5,500	11,000	1,400	2,800	–	–	1
3089	1	Pwr Unit	2	2,585	64.5	32	70.5	48.44				17,046	34,092	400	F	
3203	5	High Speed Print	4	1,067	87.75	20	46.25	11.20				8,150	32,600	530	D	4
3274	21D	Display Control	4	165	30	20	28.94	1.50				1,013	4,054	70	K/L/A2	2.4
3278	2	Display CRT	30	93	16	21	19	4.65				413	12,389	–	H/J	2.4
3287	1	Printer	12	76	23.5	20	10	2.10				502	6,020	70	H/J	2,4
3350	A2	DASD	8	1,000	45	33.5	46.5	18.40				7,201	57,611	400	E	
3350	B2	DASD	2	800	42	33.5	46.2	3.80				5,798	11,597	400	--	1
3380	AA4	DASD	16	1,200	44.5	32	70.5	38.40				6,000	96,000	300	E	
3380	B4	DASD	10	1,000	40	32	70.5	22.00				5,099	50,980	220	-	1
3420	8	Tape Drive	13	800	30	29.5	67	28.45				6,853	89,082	250	-	1
3604	6	Control Display	2	26				.10				123	245	–	H/J	4
3705	2F	Comm Controller	3	1,920	32	36	60	15.00				11,802	35,406	880	D	
3803	2	Tape Controller	4	600	30	28	60	7.20				5,642	22,569	360	E/F	2
3814	A3	Switch Mgt Sys	2	840	48.75	32	47.25	3.00				4,846	9,692	640	A	
3880	3	DASD Control	6	720	44.5	32	70.5	5.10				5,498	16,495	320	B	
3880	11	DASD Control	4	950	44.5	32	70.5	6.80				5,498	21,993	320	B	
3880	13	DASD Control	2	950	44.5	32	70.5	8.50				5,498	27,491	320	B	
	TOTALS:							233.55 KVA	61.70 KVA		181,400		694,942			

GENERAL NOTES

1) KVA totals are a vector sum, not arithmetic sum
2) Total heat values are derived from total system power, not unit heat sum
3) If the CPU uses a motor generator, KVA and A/C data for attached units is in the CPU data
4) The values shown are for data processing equipment only. Additional power and A/C loads should be added to compensate for non data-processing equipment and room losses
5) An emergency power off button should be installed in all computer rooms as stated in national elec. code, article 645

SYSTEM NOTES

1) Powered from another unit
2) Plug type optional see install manual
3) Values may vary depending on feature
4) See install manual for plug type or pwr cord style
5) Data entry required
6) 3360 select energy included
7) See install manual for site plan and prep guide for branch CRT projector time delay reqmt

* 400 HZ Power Supplied by the 3089 Power Distribution Unit

** 3033 Dimensions

	F	S	H
Frame 01, 03	76.5	31	78
Frame 02, 04	72.0	30	78
Frame 05	63.5	32	78
Frame 06, 07	34.0	32	78

*** 3081 D24 Dimensions

	F	S	H
Frame S	38.25	71.5	73.75
Frame X	37	62	73.75
Frame F	38.75	30	73.75

Appendix C
D/C SEGMENT PLUG/CONNECTOR INFORMATION

Appendix C. D/C Segment Plug/Connector Information

TYPE	PROVIDED WITH MACHINE POWER CORD			PROVIDED BY CUSTOMER					
				SERVICE RATING				INLINE	INLINE
	REF	PLUG CAP	DESCRIPTION	VOLTS	AMP	PHASE	WIRES	CONNECTOR	RECEPTACLE
60 HZ									
A	RS	3720	Waterproof	208/230	20	1	3	3913	3743
A1	RS	3720-U1	Waterproof	115	20	1	3	3913-U1	3743-U1
A2	RS	3720-U2	Waterproof	208/230	15	1	3	3913-U2	3743-U2
A6	RS	3720-U6	Waterproof	208/230	20	1	3	3913-U6	3743-U6
B	RS	3730	Waterproof	208/230	15	3	4	3914	3744
C	RS	3750	Waterproof	208/230	30	1	3	3933	3753
D	RS	3760	Waterproof	208/230	30	3	4	3934	3754
E	RS	7328	Waterproof	208/230	60	3	4	7428	7324
F	RS	JPS1034H	Waterproof	208/230	100	3	4	JCS1034H	JRSA1034 H/JR
H	NEMA	5-15P	Nonlocking	115	15	1	3	5-15R	5-15R
J	NEMA	LS-15P	Locking	115	15	1	3	L5-15R	L5-15R
K	NEMA	6-15P	Nonlocking	208/230	15	1	3	6-15R	6-15R
L	NEMA	L6-15P	Locking	208/230	15	1	3	L6-15R	L6-15R
M	NEMA	5-20P	Nonlocking	115	20	1	3	5-20R	5-20R
N	NEMA	L5-20P	Locking	115	20	1	3	L5-20R	L5-20R
Q	NEMA	L6-20P	Locking	208/230	20	1	3	L6-20R	L6-20R
R	NEMA	5-30P	Nonlocking	115	30	1	3	5-30R	5-30R
400 HZ									
G	RS	JPS1534LR	Waterproof	208/230	150	3	4	JCS1534LK	JRSA1534LK/JR

RS – Russell and Stull
NEMA – National Elect Mfr Assoc. Config. No.

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FIGURE 3.1-1 D/C SEGMENT EQUIPMENT CONFIGURATION LAYOUT
SCALE: 1/4 = 1'
D/C SEGMENT: 8,500 SQ FT
REMAINING AREA: 16,500 SQ FT

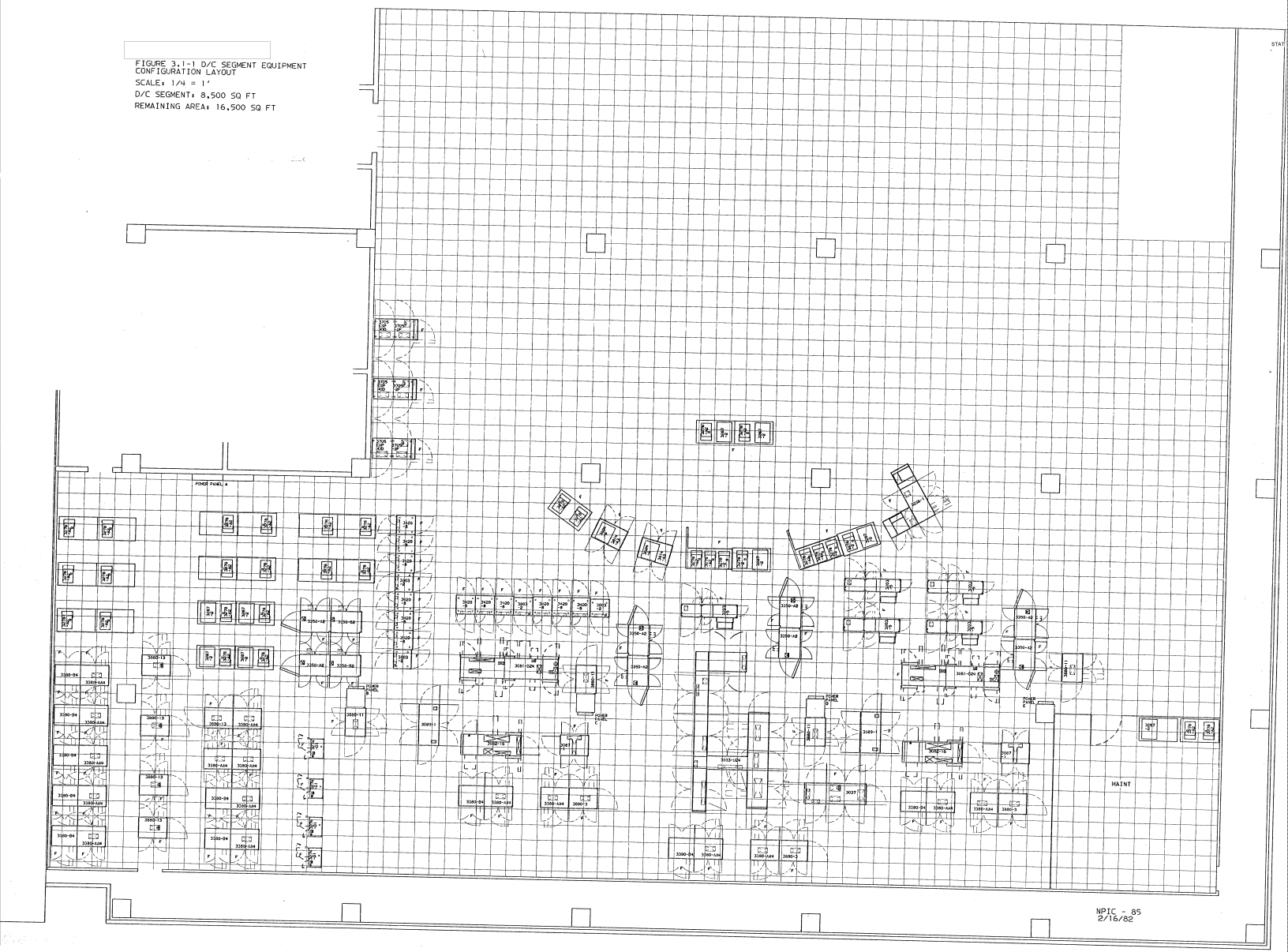

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FIGURE 4.7-1 POWER PANEL AND BRANCH CIRCUIT DIAGRAM
SCALE: 1/4" = 1'
D/C SEGMENT: 8,500 SQ FT
REMAINING AREA: 16,500 SQ FT